

Total No. of Questions – [08]

Total No. of Printed Pages-[02]

G.R. No.

Paper Code - U218-125 (BE-FF)

MAY 2019/ENDSEM

S. Y. B. TECH. (COMPUTER) (SEMESTER - I)

COURSE NAME: DIGITAL SYSTEMS AND LOGIC DESIGN

COURSE CODE: CSUA21175

(PATTERN 2017)

Time: [2 Hours]

[Max. Marks: 50]

Instructions to candidates:

- 1) Answer Q.1, Q.2, Q.3, Q.4, Q.5 OR Q.6, Q.7 OR Q.8
- 2) Figures to the right indicate full marks.
- 3) Use of scientific calculator is allowed
- 4) Use suitable data where ever required

Q.1) a) Simplify the four variable Boolean function using Quine McCluskey Method.

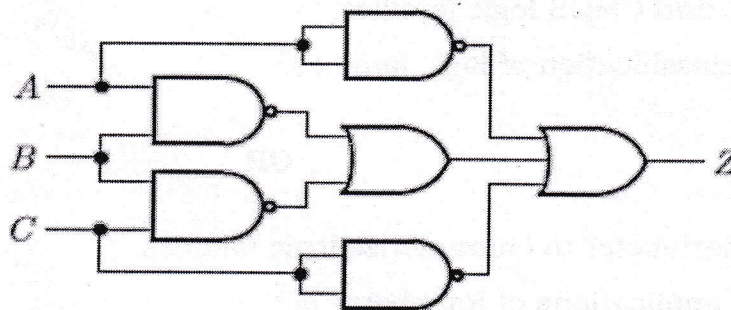
[6 marks]

$$F(A, B, C, D) = \sum m(0, 1, 2, 3, 5, 7, 8, 10, 12, 13, 15).$$

OR

b) Describe De-Morgan's Theorem. Derive the Boolean expression for Z for the given figure.

[6 marks]



Q.2) a) Design 4-bit BCD to Excess-3 code converter. Use logic gates as per your design and requirement.

[6 marks]

OR

b) Implement a 2 Bit Comparator along with truth table, k-map and logic diagram using gates.

[6 marks]

Q.3) a) Design a divide by 96(MOD-96) counter using 7490 ICs. [6 marks]

OR

b) Differentiate between synchronous and asynchronous counters along with diagram. [6 marks]

Q.4) a) Draw the architecture for PAL and PLA. [4 marks]

OR

b) What are the applications of PLD's? [4 marks]

Q. 5) a) What is VHDL? Write VHDL code for structural model of full adder. [6 marks]

b) Draw an ASM chart to describe a mealy state machine that detects a sequence of 101 and that asserts a logical 1 at the output during the last state of the sequence. [4 marks]

c) What is ASM chart? Explain Mux Controller method using suitable example. [4 marks]

OR

Q.6) a) State the differences between concurrent and sequential statements of VHDL. [6 marks]

b) What are the steps for Basic FSM design procedure? [4 marks]

c) Compare ASM & VHDL. [4 marks]

Q.7) a) Explain Arduino architecture in detail. [6 marks]

b) Compare TTL and CMOS logic families. [4 marks]

c) What is the classification of logic families? [4 marks]

OR

Q.8) a) Explain the parameter to characterize logic families. [6 marks]

b) What are the applications of Raspberry pi? [4 marks]

c) Explain CMOS and RTL? [4 marks]